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ABSTRACT

The Multnomah County Intermediate Education District, located in Portland, Oregon, uses a computerized system to meet the catalog, circulation control, and management needs of its regional film library. The system's programs serve the four functions of: 1) creating and maintaining a film file; 2) developing a catalog; 3) booking film requests on a daily basis; and 4) generating monthly and year-to-date reports. The system is highly successful, for it efficiently schedules films for 70 buildings in 13 districts. Of the 60,000 requests for films in the 1972-73 school year, more than 90% were filled, despite the fact that the film library contains only one copy of most films (nearly 3100 different titles among its 3600 prints). Computerized scheduling allowed each print to be used 14.4 times annually and permitted each teaching station to utilize 37.1 films per year. (PB)

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AN AUTOMATED MEDIA SCHEDULING and CIRCULATION CONTROL SYSTEM

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PURPOSE

This paper intended to describe and display the existing system. Individuals who wish to create a system of their own should be able to use this paper as a model from which to proceed. This is not a paper which can be read in order to understand how a system should work in theory. The whole system was originally designed to meet the catalog, circulation control and management of a regional film library. This paper should stimulate ideas and dialogue between the media specialist and the data processing specialist.

THE A-V PROBLEM

The initial incentive for computerizing this system was to relieve pressure in booking films for participating schools. In 1966-67, one booking clerk became unable to keep up with manually scheduling 18200 films. Request processing ran from two to three weeks behind receipt.

Existing booking techniques were not models of efficiency. After lengthy discussions, it was decided to take a quantum step forward to a computerized system rather than an intermediate step of better manual methods.

Film bookings have increased from 18200 to 52000 with no additional personnel dedicated to scheduling or catalog preparation. The automated system is conservatively estimated to eliminate the need for four people. Its annual cost is less than 2 1/2 people. It is cost justified on scheduling - personnel alone.

A secondary incentive was catalog preparation. Although an elegant indexing system was not used, catalog preparation had been such an expensive operation that it formerly occurred once every three years with annual supplements. During the recent period of rapid growth the need for an annual catalog was expressed.

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IR 000 197

From a practical standpoint it was felt that a KWIC (key work in context) catalog orientation could be made highly effective. After an initial outcry, users have expressed unanimous support for this technique. It is apparently a very good way to locate a desired film . . . so long as creative descriptor modifications can be made to meaningless or misleading titles.

The current system creates a camera-ready catalog and is printed annually.

STATISTICS

Films are scheduled for 70 buildings in 13 districts. Twice-weekly deliveries are made on Monday - Thursday and Tuesday - Friday. Unless otherwise requested or unless a lengthy film, each item stays in the building for one cycle. Most films can be used three times in two weeks by going out Monday, Friday and Thursday.

The library size has grown from 1800 to 3600 films with nearly 3100 titles. While the library size has doubled bookings have tripled in 6 years and the odds on filling a request have risen from .5 to .9.

From 60,000 requests, over 54,000 films will be booked in 1972-73. This 90% rate can be compared to 50% in the manual system.

For evaluative and comparative purposes, four indices are suggested (1971-72):

a) effectiveness index = .91
   -percentage of requests filled
b) efficiency index = 1.2 : 1
   -ratio of prints to titles
c) annual inventory turns = 14.4 (or 16.9)
   -average number of times each print (or title) is used annually
d) annual circulation per teaching station = 37.1
   -number of prints annually per teaching station

Daily request processing runs to 1000. Daily computer time is budgeted at one hour. Request cards are punched by the film scheduler in the A-V Dept. Films may be requested at any time for remainder of the school year. The daily keypunch load has never exceeded 1/2 day.

Data processing costs have never exceeded $.22 per film scheduled. This includes all DP costs, including catalog preparation, scheduling, and generation of management reports.

DATA PROCESSING OPERATION

Nearly five months were spent in keypunching and proofing 4000 title-cards and 10,000 abstract cards. Each title requires two cards and each abstract was found to average five cards. The catalog was prepared in KWIC form with abstracts in the back of the catalog. Each title averaged 4 to 5 entries in the catalog once non-indexing words were elminated. When multiple copies exist, the A-V Dept. controls which one prints in the catalog in order to even out the use of all copies (since all requests start with the catalog number).

The daily run is made at the start of swing shift. Delivery of the day's requests is made by 5:30 p.m. so that any last minute walk-in requests can be handled.

Nearly three years were required before all abstract information was completely proofed.

AUDIO-VISUAL OPERATION

Most requests are received on a standard request form. A daily list also provides the ability to commit a film immediately in an emergency.

Confirmation lists are returned to schools daily as processed and daily schedules are delivered to the building with each film shipment. The daily list also shows the next date scheduled for each film so that they may be cleared immediately and re-shipped that same day as returned when necessary.

An annual schedule of films scheduled stays updated and is used for personnel planning. Monthly circulation reports by teacher and by district are used to stimulate dialogue with the appropriate building personnel.

For library management, on-demand reports show circulation information on requests and turndowns by film. These reports may be sorted to sequence such as film number, film title, subject code, and vendor in order to attain maximum utility.

To assist catalog preparation, various proof lists are prepared for checking. The three sections of the catalog (subject index, KWIC index, and abstracts) are independently processed in an overlapping fashion for convenience of schedules.

SUMMARY

Automated processing began in 1967-68. No fundamental design changes have been requested since then. Although many operational enhancements and report content additions have been made.

This has been a highly successful project. Improvements in library management and user service have been dramatic.

It is a straightforward system that encounters very few problems.

The temptation to put the system "on-line" and glamorize it arises annually. All existing information suggests that costs would at least double - with no increase in effectiveness or efficiency. To date, no substantive improvement can be identified which would justify going "on-line".

Although independent of the computer aspects, this (or any) system would fail without real cooperation by the teachers in returning films on schedule. The A-V Dept. has concentrated upon meeting commitments - getting films back on time in return for a very high hit ratio.

FILM BOOKING ALGORITHM

Each film - number request has three associated dates:

1. Preferred date
2. Not-before date (earliest acceptable date)
3. Not-after date (latest acceptable date)

No constraints exist in terms of lead time so that a film can be requested for any time during the school year.

The film number and the three dates are checked for validity. The dates are changed to the nearest valid date for a particular building as necessary.

Additional editing takes place to insure that the requested film is not out for repair and to prevent booking a senior-high-only film for an elementary building. The request is also flagged to indicate the total time period that has been requested if it is other than the usual four days.

After scheduling occurs by checking the preferred date and then swinging back and forth in pendulum fashion between the other two dates. Where multiple copies exist, all copies are checked for a given date prior to moving further away from the preferred date.

If the film (or a copy) is available, statistical counters are up-dated and proper notification is made for the confirmation listing. If not available, the confirmation listing so indicates.

Requests are booked on a first-come, first-served basis so are under control of the A-V section where the keypunching is done. If a high priority request is received, it is simply placed as the first request to be processed.

GENERAL SYSTEM DESCRIPTION

The AV system can be broken down into four main phases -

1 - the initial creation and file maintenance of the film file
2 - the catalog creation
3 - the daily booking and picking of film requests
4 - the monthly and year to date reports

PHASE 1 - Initial creation and file maintenance of the film file

The AV Department codes on standard 80 column forms data concerning films, as specified by the master record layout, which are then punched into two master cards per film. These are then edited and loaded onto the disk. Any corrections to be made to the film file will also be submitted in the same manner.

AV004 - AV film deletion - This program deletes films from the master file and, if necessary, eliminates the see also to the specified film.

AV005 - AV Film addition - This program adds the two master cards for each film onto the master file.

AV006 - Individual AV film changes - This program is designed to change any field of any film. The only restriction is that this program cannot be used to change a film number.

AV053 - Clear booking dates and totals - This program clears all booking information that is on every film on the master file. The only time this program should be used is just before starting a new year of AV request processing. After this program is run, the only information left on the master file is the information created by -AV005 -

PHASE 2 - Catalog creation

The master file on disk is used in making the - KWIC - index list. The abstracts punched into cards are read and combined with the films on the master file to create the film descriptions list.

MC259 - Build AV KWIC file - This program creates the KWIC file.

MC269 - AV KWIC and subject code list - This program lists both the KWIC and subject code files.

MC418 - AV abstract list - This program lists the abstracts for each film on the master file.

PHASE 3 - Daily booking and picking of film requests

Schools send in requests that are keypunched into request cards which are then processed by the computer. The action taken for each request is then listed and stored for future use.

All appropriate records are then selected on their respective dates and the film schedule is printed.

Copies of both the actions taken and the film schedules are sent to the schools and retained on file by the AV Department. The films go out with their respective schedules. The film schedules contain information necessary for both delivery and pick up of the films and are designed to be used for those purposes.

AV001 - AV card to disk DR2 - This program loads all AV card input to DR2. These cards include the master file changes, film requests whether keypunched or transmitted and film cancellations.

AV002 - AV tape to disk and tape - This program loads the previous daily run files onto disk DR2, rebuilds the AV master film pack if requested, selects all the picking records for the current run and transfers all previous film requests to magnetic tape.

AV003 - AV edit - This program edits the request, cancel request and AV master file add, delete and change records. Any errors encountered will be printed with error field (s) flagged.

AV008 - Cancel requests - This program removes any previoulsy booked request from a particular film in order to make that space available to another request.

AV009 - AV booking program - This program is designed to determine whether or not a film can be released to a school within the dates specified by the school. If the film is in fact available, then the program will book that film for a three day period reserving it for that school. It will then create a booking record and print a line on the printer specifying the exact dates, the teacher requesting the film, the film number and title, and the school number and name. If the teacher wants to keep a film longer than the three day period allows, he must specify a booking factor of -1- which reserves the film for an extra booking period.

If the film is not available as the teacher requested then a turned down record will be produced and a line will be printed, as above, stating the reasons the film is not available.

AV010 - AV picking list - This program is designed to provide a listing for the AV Department for delivering the films to the school. The program produces a listing by school of all the booking records to be picked for a particular day. The report lists the teacher name, film number and title, the date that the films are to be returned, the next date each film is reserved and the total number of films to be taken to each school on that day.

AV011 - AV schedule table for bookings list - This program lists every day on which there is a booking and the total number of bookings for that day. This is a quality control report verifying that every film that was booked was also picked.

AV012 - AV disk to tape - This program copies the current run files from disk DR2 and the AV master pack from DR0 onto the magnetic tape following the output generated by -AV002-. The files on DR2 include this day's film requests, master changes, teacher names, schedule table and overflow booking records.

AV013 - AV forecast list - This program lists up to the next 4 available booking days for each film on the AV master pack. It is used by the AV Department to know an open booking cycle for a particular film on a daily basis.

PHASE 4 - The monthly and year to date reports

At the end of each month all the requests processed are used to gather statistics by school and teacher. A film usage report is also produced which prints the number of bookings and turndowns for each film on the file. In addition to film and school statistics, reports can be made using any combination of the information within the film file. Examples would be film lists in sequence by film number, film title, date of purchase, source, etc.

AV050 - Calculate school statistics - This program calculates the number of requests, bookings, pickings and turndowns along with the percent booked for each school. The end of month requests record tape is purged of all picked and turndown records and a new tape for the next month's processing is created. The school totals are stored on disk for the following program - AV051 - to use as input.

AV051 - AV school statistics list - This program accepts the school totals created by -AV050- as this transactions to update the school statistics history tape. The month's school totals are added to a year to date total for the school and a grand total for all schools. A list is generated displaying each school's monthly totals and year to date totals. Also printed are the grand totals and percentages for all schools.

AV052 - AV film usage statistics - This program is designed to give the AV Department an idea of the activity of each film by one month periods. It lists each film showing the number of bookings and turndowns for the month. The program will then add the monthly statistics to the yearly statistics and then clear the monthly totals in preparation for the next month.

AV055 - AV teacher statistics list - This program accepts the picking records created by -AV050-. A list is generated displaying each teacher's monthly count of films picked. Also printed are the totals of films picked per school.

MC426 - Transfers films to scratch pack - This program is designed to create a single sector record of every film on the master file in preparation for sorting purposes to then be listed by the following program - MC427. Because of the lack of space, -MC426- will transfer only the major subject code, only the year of the new date field, and either the monthly or the yearly booking and turndown totals.

MC427 - AV general purpose film list - This program lists the information produced by -MC426- and displays every see also film number lined to a particular film. If the film has more than eight see also numbers, a film linkage error is assumed, a typewriter message is typed and the program returns to the next film.